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June 21, 2022

Ms. Cynthia Kaleri
Air Permits
USEPA Region 6
1201 Elm Street, Ste. 1200
Dallas, Texas 75270-2102

Re: Response to Request for Additional Information on Minor NSR and Title V Applications Texas GulfLink Deepwater Port Project

Dear Ms. Kaleri:

Thank you for your request for additional information on the minor New Source Review (NSR) and Title V permit applications submitted to EPA Region 6 on April 22, 2022. This document responds to EPA's request for additional information in your letter dated May 11, 2022.

Our responses follow the format of your May 11 letter. We have copied the agency's questions/requests below and provided Texas GulfLink's response after each. Supporting documentation is included as attachments to this response. Please note that we have responded to all questions included in the May 11 letter.

Confidential Business Information attachments:

I. **CBI** - **Appendix I** – **Texas GulfLink Operations Manual** – Appendix III – Vapor Recovery Operations by 3rd Party OSV (Working Draft)

II. **CBI** – **Appendix II** - **Wärtsilä VOC Recovery System** "Vent Monitoring – Description", Report #C203308

III. **CBI** – **Appendix III** - **Wärtsilä VOC Recovery System** "Vent Monitoring – Drawing"

IV. **CBI** – **Appendix IV** - **Wärtsilä VOC Recovery System –** Process Flow Diagram with Equipment Specifications

V. **CBI** – **Appendix V** - **Wärtsilä VOC Recovery System –** Process Flow Diagram with Operating Ranges

VI. **CBI** – **Appendix VI** - **Wärtsilä VOC Recovery System –** Recovery Plant Performance

VII. **CBI** – **Appendix VII** - **Wärtsilä VOC Recovery System –** VOC ESD & PSD PLC Chart

VIII. **CBI** – **Appendix VIII** - **Wärtsilä VOC Recovery System –** Draft Maintenance Schedule

IX. **CBI** – **Appendix IX** - **Wärtsilä VOC Recovery System –** Draft Two Year Recommended Spare Parts List

General Preconstruction Authorization Related

1. The application submittal relies upon AP-42 factors for the most part, augmented by crude specific parameters in some cases to characterize the crude to be handled through the port. In particular, TGL has partially characterized the hazardous air contaminant constituents of Bakken crude oil, but did not include the hexane component of that particular crude oil. Please provide a reasoned explanation for not including such constituents in your analysis.

Response: Detailed crude oil assay data from producers are not normally available to the public. Some basic parameters (e.g. specific gravity, viscosity, sulfur content, etc.) of crude oils can be found on-line, but detailed data (e.g. HAP speciation) are typically not available. Nevertheless, Texas GulfLink attempted to collect what HAP speciation data could be found for particular crudes. Note that Texas GulfLink added additional text in the permit application and a footnote in the emission calculation spreadsheet to explain why there are some gaps in the HAP speciation profile of the various crude oils evaluated.

VOC emissions from the crude oil loading (uncontrolled and controlled) make up 96% of the total VOC emissions from the proposed deepwater port facility (all emission sources). For these loading calculations, a worst-case HAP speciation profile was used. HAP concentration data was obtained from various sources, including the database from EPA's Tanks 4.09d model (which gives the most comprehensive list of HAP compounds) and from general assay data of different crude oils that the facility would handle. The highest weight fraction of each HAP was used to give the most conservative (i.e. highest) HAP emissions.

Note that Bakken crude oil was included in the list of possible crudes in the emission calculations, although the proposed deepwater port facility will likely not handle this crude. Normal hexane (n-hexane) for the Bakken crude was not included in the original loading calculations because this compound was not listed in the Bakken assay sheet (see the first paragraph of this response). However, to address n-hexane from this crude, the weight fraction of "C6 Paraffins" from the assay was included in the emission calculations because n-hexane would fit under this category. It was assumed that the entire C6 Paraffins was n-hexane, which is a conservative assumption. At 3.25%, the weight fraction of n-hexane from the Bakken assay is higher than the "hexanes" weight fractions shown in West Canadian Select (WCS) crude assay data also reviewed.

When the assumed n-hexane weight fraction from Bakken was added to the loading calculations, the HAP emissions from this compound increased slightly. The TCEQ MERA health impacts assessment was revisited, and as had happened in the previous assessment, all HAP compounds except for benzene dropped out of the MERA process so that site-wide modeling was only required for benzene, and the results were again below the ESL standards. See Sec. 7.0 of the minor NSR air permit application for the health impacts assessment.

Note that additional text in the permit application and a footnote in the emission calculations spreadsheet have been added to explain this difference in HAP speciation.

In addition, there seems to be some conflict between the explanation of the crude oil characterization in the minor NSR application and that explanation in the corresponding Title V application; the crude oil characterizations in both applications should be the same.

Response: The difference between the HAP speciation profile used for pipeline fugitive sources and the HAP speciation profile used for non-fugitive sources is that for fugitives, liquid-side weight (mass) fractions are used and for non-fugitive sources, vapor-side weight fractions are used. For non-fugitive emission sources, such as a VLCC hold tank, a pipeline pig receiver, a hose ending (for disconnects), etc., a vapor space can form which allows a vapor concentration profile to be established (i.e., a HAP compound can partition from the liquid phase to vapor phase). Therefore, vapor-side HAP weight fractions are used. However, for pipeline fugitives, emissions are assumed to occur from pin hole leaks, for example from a valve packing gland or from a gasket in between two flange connections, where emissions occur directly from the liquid in the pipe. There is no vapor space; therefore, liquid-side HAP weight fractions are used. Note that additional text in the permit application and a footnote in the emission calculations spreadsheet have been added to explain this difference in HAP speciation.

Finally, reference to the methods proposed to be used once operations begin in order to estimate and demonstrate compliance with the emissions limitations for the handling of the crude oil actually transferred could not be located. Please provide your calculational methodology and references/justifications for your proposed emission estimation methods to be used.

Response: The same calculation methods used to estimate the Potential-to-Emit (PTE) emission rates for establishing the permit limits (ref. Section 3.0 of the minor NSR and Title V permit application) will be used to determine actual emissions from normal operation after the facility is constructed and running. In the PTE calculations, maximum possible operating parameters were used, such as crude oil loading rates, storage tank throughputs, number of hose disconnects, engine operating hours, MSS activities (e.g. sampling activities, pump maintenance, pigging events, blasting/painting, etc.), and number of uncontrolled loading events (due to bad weather). In estimating actual emissions, the same emission equations will be used but the operating parameters will be on an actuals basis (i.e., actual crude oil loading rates, tank throughputs, engine operating hours, etc.) as measured by TGL. How TGL will measure actual operating parameters is outlined on page 2 of this document in response to question #2 from EPA's RFI letter. Actual emission rates will be compared to permitted emission rates to demonstrate continuous compliance.

This is necessary so that emissions factors and emissions of the actual crude being loaded will be determined and documented in an operational ongoing manner. Include any monitoring, testing, recordkeeping and reporting methods to be relied upon for continuous compliance determinations.

Response: Emission factors and calculation methods are described in detail in Section 3.0 of the minor NSR and Title V permit applications, as well as shown in the detailed emission rate calculations (Appendix B in the minor NSR application and Appendix C in the Title V application). Proposed monitoring, testing, recordkeeping, and reporting methods to be relied upon for compliance demonstrations are outlined on page 2 of this document in response to question #2 from EPA's RFI letter.

2. Given the presentation of emissions estimates generated during loading operations, the text appears to imply but does not definitively state that the emissions capture is assumed to be 100 percent (%) for the VLCC or ship to be loaded. If this assumption is being made, please provide substantiation and detailed explanation/rationale that the vessels to be loaded will indeed have the ship's holds and associated vapor space 100% leak free while in port and also while being loaded. If there are emissions that can originate from the ship while in port from the cargo hold, from the vapor space associated with such holds or from the product or vapor space piping, please include that analysis along with the equations or emissions factors and calculated emissions and supporting equations from those sources.

Response: TGL's operations manual **Appendix I - Appendix III – Texas GulfLink Operations Manual - Vapor Recovery Operations by 3rd Party OSV** is provided as a Confidential Business Information reference document. It should be noted that this document is a living/working document that will be further updated in partnership with required regulations, permit guidelines/requirements, and continuously improving technological applications. The initial structure is a baseline for this development.

Within the document, the following sections cover topics related to the question(s) above, with these descriptions available for public viewing:

Appendix III, Section 3. "*Vapor Control Reference Information*"

- Explanation of cargo tank vapors generated during loading process
- Applicable and Adhered Reference Information & Regulations
  - 46 CFR§ 63.563 Compliance and performance testing
  - 46 CFR§ 63.565 Test methods and procedures
  - 46 CFR § 63.567 Recordkeeping and reporting requirements.
  - IMO MSC/Circ.585, Standards for vapour emission control systems
  - OCIMF Volatile Organic Compound Emissions from Cargo Systems on Oil Tankers
  - MARPOL Annex VI - Regulations for the Prevention of Air Pollution from Ships

- IMO MEPC.1/Circ 680 - Technical information on systems and operation to assist development of VOC management plans
- IMO Annex 10 – MEPC/Res.185(59) Guidelines for the development of a VOC Management Plan
- ABS – VOC Management Plan

Appendix III, Section 4. *"Vapor Recovery Statement & Checklist"*

- Texas GulfLink will use a company mandated checklist to address key points of the vapor recovery OSV operation, including, but not limited to, the requirement of full vapor conveyance for recovery and confirmation of vapor tightness.

Appendix III, Section 5. *"Vapor Tightness Compliance"*

- Documentation and procedures to ensure tankers are compliant to meet the USCG and CFR requirements for vapor recovery at the GulfLink Deepwater Port and that vapor tightness is maintained throughout the loading process.

1. Operations Manual 25.7.1

   Verification message to tanker confirming Vapor tightness certificate and approved VOC Management Plan

   - Master confirms certificate and VOC plan are approved and current

2. Operations Manual 28.8.3

   Pre-transfer conference checklist

   - Chief Mate and CTA confirm Vapor Tightness Certificate validity date
   - Tanker deck watch makes rounds on deck to identify vapor tightness

3. Operations Manual Appendix III

   Pre-Transfer Vapor Recovery Statement & Check List

   - Statement of requirement to capture and process all vapors
   - Defines tanker's and OSV's responsibility to detect any vapor leaks
   - Establishes no venting of cargo vapors permitted
   - Defines communication method between tanker and OSV

4. OCIMF SIRE Inspection Q. 8.92

   Vapor Tightness Certificate up to date for US ports

   - SIRE inspection verifies current certificate held as of date of inspection

5. Operations Manual 3.7

   Tanker Vetting Process

- Details vetting process for tankers and requires review of SIRE inspection report

Appendix III, Section 6. *"Gas Sampling Leak Detection Procedure and Meter"*

- Discusses the deck watch duties on the tanker and OSV for leak detection (vapor leak detection) during the crude loading process.
- Includes Method 21 alternate screening procedure and use of SNOOP lead detections solution
- Describes specific meter use of the RKI Eagle 2 meter for verification and quantity of leak if discovered/needed.

Appendix III, Figure 12 – *"Cargo Tank Pressure Reference"*

- Provides operating pressures that can relate to any possible release via the emergency venting system (pressure safety valves).

In addition, please include the proposed monitoring, testing, recordkeeping and reporting that will assure that the emissions from the ship cargo or cargo hold related vapor space are properly characterized and maintained at or below the represented emissions rate and total emissions estimated while in port. If TGL is relying in whole or in part on international standards for the control of cargo and vapor space emissions while the ships are in port, please indicate how those will be implemented and documented for each vessel calling at the port.

Response: This is covered in several sections of the response letter; including in the first part of Question #2 and within Question #3. In addition to adhering to the following:

- 46 CFR§ 63.563 Compliance and performance testing
- 46 CFR§ 63.565 Test methods and procedures
- 46 CFR § 63.567 Recordkeeping and reporting requirements.

Texas GulfLink will utilize both a Gas Chromatograph and a Programmable Logic Computer ("PLC") with feedback from various transmitters for temperature, pressure, flow, and status. Condenser vapor control systems require monitoring VOC outlet concentration and baseline temperature readings for require percent recovery efficiency. TGL will voluntarily utilize both as a redundant monitoring check, during start-up performance[1] checking and ongoing monitoring. All record keeping and reporting requirements by regulation will be followed.

TGL's operations manual **Appendix I - Appendix III – Texas GulfLink Operations Manual - Vapor Recovery Operations by 3rd Party OSV OSV** is provided as a Confidential Business Information reference document. It should be noted that this document is a living/working document that

[1] 40 CFR 63.563(b)(7)

will be further updated in partnership with required regulations, permit guidelines/requirements, and continuously improving technological applications. The initial structure is a baseline for this development.

Below are some of the referenced descriptions and explanations:

Appendix III, Section 3. "*Vapor Control Reference Information*"

- Applicable and Adhered Reference Information & Regulations
  - 46 CFR§ 63.563 Compliance and performance testing
  - 46 CFR§ 63.565 Test methods and procedures
  - 46 CFR § 63.567 Recordkeeping and reporting requirements.
  - IMO MSC/Circ.585, Standards for vapour emission control systems
  - OCIMF Volatile Organic Compound Emissions from Cargo Systems on Oil Tankers
  - MARPOL Annex VI - Regulations for the Prevention of Air Pollution from Ships
  - IMO MEPC.1/Circ 680 - Technical information on systems and operation to assist development of VOC management plans
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- Texas GulfLink will use a company mandated checklist to address key points of the vapor recovery OSV operation, including, but not limited to, the requirement of full vapor conveyance for recovery and confirmation of vapor tightness.
- These records will be kept on file with TGL and available for reporting purposes.

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- Discusses the deck watch duties on the tanker and OSV for leak detection (vapor leak detection) during the crude loading process.
- Includes Method 21 alternate screening procedure and use of SNOOP lead detections solution
- Describes specific meter use of the RKI Eagle 2 meter for verification and quantity of leak if discovered/needed.
- These records, incident scenarios (if any), and meter readings will be kept on file with TGL and available for reporting purposes.

Appendix II - Wärtsilä VOC Recovery System "Vent Monitoring – Description", Report #C203308

- This document is **Confidential Business Information**
  - Summary:

- Wärtsilä Gas Solutions Norway AS solution for monitoring of vent gas is based on simple solution which combines the measurement of its flow and composition by means of a Gas Analyzer. The Gas Analyzer system is a combination of two separate sub-systems: gas analyzer cabinet and ultrasonic flow transmitter
- The Gas Analyzer is supplemented by temperature, pressure, and flow, in addition to use of a Gas Chromatograph.
- Component details, schematics, and specifications are included for the monitoring and testing. Records will be kept on file and available as needed for reporting requirements due to regulation.
- **Appendix III - Wärtsilä VOC Recovery System "Vent Monitoring – Drawing"** is also included for reference.
  - This document is **Confidential Business Information**

In the discussion concerning control of hazardous air pollutants, TGL indicated that an analysis of those applicable requirements for area sources will follow under separate cover. Please provide TGL's full regulatory applicability analysis for the proposed project as part of the application submittal.

Response: In Sec. 6.1 of the minor NSR application (Sec. 4.1 of the Title V application), reference is made of the Case-by-Case MACT analysis performed to establish HAP emission controls for the deepwater port, instead of 40 CFR 63 Subpart Y establishing these controls. This analysis was performed because it is Texas GulfLink's position that Subpart Y does not apply to the proposed deepwater port facility. A reference was made that the Case-by-Case MACT assessment is provided under separate cover. This reference has been deleted in these sections of the permit applications.

3. TGL's applications reference the vapor processing equipment onboard the Offshore Service Vessel (OSV) and characterizes the vapor processing system, including the Gas Turbines to control the vent stream from the vapor processing module as capable of reducing marine loading related emissions by over 97%. However, no supporting information is provided about the vapor processing system such as its design and operating characteristics,

Response: The offshore service vessel ("OSV") holds a vapor recovery module ("VRM") that takes in and processes the vapor stream from Texas GulfLink's ("TGL's") crude loading process. The vapor stream contains volatile organic compounds ("VOCs") which are processed and removed in the VRM system. The VRM system converts the VOC vapors into liquid which is repurposed for sale in the Houston market. Remaining VOC vapors not condensed into liquid form is used as fuel for the OSV.

The VRM has the following process components, which are listed in chronological flow order from the moment vapors enter the module:

1. Knock Out Drum
2. Compressors
3. 1st Stage Condensation
4. 1st Stage Separation
5. 2nd Stage Condensation
6. 2nd Stage Separation

The vapors enter the Knock Out Drum, where the gas is scrubbed and the pollutants are removed. These pollutants include soot and corrosion aerosols that are removed and discharged into the slop tank. The water scrubbing application and demisters have a water supply consumption rate of 400 l/loading. At this process train the pressure is 1 bar and the temperature is approximately 38 degrees Celsius.

After the Knock Out Drum, the vapors enter the compressors where the pressure is increased to 13 bar and the outlet temperature is 120 degrees Celsius. This is done to avoid condensation of water and heavy hydrocarbons into the lubrication oil of the compressor. The compression train consists of two (2) units operating at 50%. The capacity of each compressor is 8,000 Am^3/h with 1,800 MW motors.

After the compression train, the vapors are cooled by sea water in the 1st Stage Condenser unit. Sea water enters the condenser at 3 bar at 32 degrees Celsius and exits at 3 bar and 44 degrees Celsius. The cooling water flowrate is 355m^3/h with a motor duty of 2,600 kW. The heat transfer brings the vapor temperature down from 120 degrees Celsius to 39 degrees Celsius, pressure remains consistent at 13 bar. During this temperature drop, the vapor stream is condensed into liquid volatile organic compounds (“LVOC”), remaining vapors are continued into a secondary train as surplus volatile organic compounds (“SVOC”) and water. These three mixtures are fed directly into the 1st Stage Separation train.

The 1st Stage Separation train is a 3 phase separator, inside the separation unit the water has the highest density at the bottom of the unit, LVOC will be in the middle, and SVOC will be at the top for segregation. The separator can handle 5,900 kg/hr of LVOC. The water is discharged into the Knock Out Drum at 1 bar of pressure and 39 degrees Celsius. The LVOC is diverted to storage in modular pressurized tanks at 1-13 bar of pressure and 30-39 degrees Celsius. The SVOC is diverted to drying and additional cooling at a pressure of 13 bar and temperature of 39 degrees Celsius. The LVOC stored after the 1st Stage Condensation and Separation can be either used for fuel on the OSV or resold in the Houston market. This completes the vapor recovery module process for the LVOC and water diverted at this stage.

The SVOC continues to a dryer to lower the dew point to -52 degrees Celsius. The module has two (2) dryers capable of 100% utility each. Before and after drying, the pressure remains at 13 bar and temperature at 39 degrees Celsius. After drying, two (2) streams are identified for precooling, additional LVOC and remaining SVOC. The LVOC generated goes to the LVOC pressurized storage tanks and the SVOC stream goes to 2nd Stage Condensing and Separation.

2nd Stage Condensing utilizes propylene as a coolant at -47 degrees Celsius. From the condensation unit the vapor stream is once again separated, via a two (2) phase separator handling 8,300 kg/h, into LVOC and SVOC. The SVOC diverts to consumption by the gas turbines for power and the remaining LVOC is sent to the pressurized storage tanks.

See:

- **Appendix IV - Wärtsilä VOC Recovery System – Process Flow Diagram with Equipment Specifications**
  - This document is **Confidential Business Information**
- **Appendix V - Wärtsilä VOC Recovery System – Process Flow Diagram with Operating Ranges**
  - This document is **Confidential Business Information**

The vapor recovery module itself has an efficiency rating of ninety-five (95%) percent without the use of the Gas Turbines[2] to consume excess SVOC into power. The Recovery Plant Performance spreadsheet showcases the derived energy use, mass flow rate expected, and specific volume generated, which provides a modeled scenario and expected operational results for baseline confirmation. These factors also play into the continued monitoring, testing, and recordkeeping after commissioning of the system per regulatory requirements. The projected plant performance calculations, although already proved in practice on fifteen (15) North Sea tankers[3], will be adjusted and reconciled during the commissioning phase of the VRM.

See:

- **Appendix VI - Wärtsilä VOC Recovery System – Recovery Plant Performance**
  - This document is **Confidential Business Information**

Explanation of the **Appendix VI - Wärtsilä VOC Recovery System – Recovery Plant Performance**

- Column 2 – α (Alfa) is showing HC content from 10 to 60 percent over the course of the loading. In reality we will see a pattern with alfa going up and down with two or more low points when new tank pairs are introduced in the loading sequence. However as an assumption the shown pattern gives a correct result.
- Column 3 and 4 shows loading rate versus total emission
- Column 5 shows total inlet mass Flow, consisting of inert gas and hydrocarbons. It is seen from coloumn 6 and 7 that the share of hydrocarbons increase as the alfa value increases.

[2] The incorporation of Gas Turbines downstream of the Vapor Recovery Module allow for the SVOC and some LVOC to be used as fuel to power the OSV. Since the SVOC will always be less than the amount needed for power, the excess VOC will always be consumed, thus bringing the efficiency higher to 99.9% under perfect conditions.
[3] The Wartsila vapor recovery module has fifteen units in operation on North Sea shuttle tankers. The estimated plant performance data is based on real-world feedback and refinement of this process modeling with confirmed operational data.

- Column 8 shows the specific heating value of the incoming VOC and coloumn 9 the total power inlet flow in MW assuming a perfect macine to translate the energy into power.
- Column 10 to 14 shows the Recovered Hydrocarbons which will be stored in the LVOC tank for later discharge to shore and subsequently to refinery for production of commercial products.
- Column 15 and 16 shows the energy content in the LVOC
- Column 17 Shows the totla mass flow of SVOC. This is the flow which will go to the Gas Turbines
- Column 18 and 19 shows the methane and non methane content in the SVOC. These are the compontents contributing as fuel in the Gas Turbines. The remaining content of the SVOC is inert gases, mainly CO2 and N2.
- Column 20 shows the specific heating value of the incoming VOC and coloumn 21 the total power inlet flow in MW assuming a perfect macine to translate the energy into power.
- Column 22 is important since this is related to the power produced by the Gas Turbines. The Gas Turbines will produce around 1.8 MW each (depending on ambient temperature and of gas composition). We see that the energy content in the surplus gas never exceeds 2 x 1.8 MW = 3.6 MW. This means that in order to run the Gas Turbines on full effect during operation we will add vaporised LVOC to the SVOC in order to run the Gas Turbines on full speed.

or how one is to assure that the system is running and achieving the referenced emissions reductions in an initial and also an ongoing manner for compliance assurance purposes. This information is a critical component of the overall design and operation of the port as the vapor recovery and control system is the key means of controlling a marine loading vent stream capable (the application indicates) of producing over 3000 lbs/hr VOC emissions which in not insubstantial part, are also characterized as hazardous air pollutants.

Response: TGL will have two (2) forms of operation verification – one will be for regulatory compliance reporting and monitoring, the other will be for safe operating parameters, which also include set points for the required regulatory compliance.

See:

- **Appendix VII - Wärtsilä VOC Recovery System – VOC ESD & PSD PLC Chart**
  - This document is **Confidential Business Information**

This document provides a summary overview of mechanical, electrical, and pneumatic processes which have safety, set point, limitation, and emergency scenarios that validate the vapor recovery module is in a proper operating condition or state. These descriptions, inputs, and alarms are showcased within the table.

Although not applicable, TGL will be following requirements of 40 CFR 63 Subpart Y, and voluntarily incorporating both temperature and chromatograph (part I and II) of condenser vapor recovery monitoring for duality purposes.

Also, as previously stated and referenced in the earlier questions, TGL will have a dual sub system for testing during operations. A Gas Analyzer and Programmable Logic Control with transmitters will be deployed on the VRM. Transmitters will be present at several process modules for various conditions such as pressure, temperature, flow, and level indication, which will feed the PLC information that will calculate operating conditions against system engineering specifications, process design expectations, and most importantly, commissioning conditions validated by a 3rd party.

Furthermore, the Gas Analyzer will determine speciation of emissions, if any, that may be present from detection by the flow switch and vapor pathway downstream of the VRM. This would detect and speciate vapors from any vent or bypass system that is installed and any excess vapor downstream of the Gas Turbines.

Regarding the ability of equipment to control/handle rates with possibly 3000 lb/hr VOC emissions, see the previous write-up under system operating characteristics or refer to:

- **Appendix IV - Wärtsilä VOC Recovery System – Process Flow Diagram with Equipment Specifications**
    - This document is **Confidential Business Information**
- **Appendix V - Wärtsilä VOC Recovery System – Process Flow Diagram with Operating Ranges**
    - This document is **Confidential Business Information**

Please provide a detailed explanation of the operating characteristics of the vapor processing system, the potential emissions streams (such as bypass vents, if any), and plans for how the system is to be initially tested to assure its initial compliance.

Response: (See above for operating characteristics)

Wartsila Gas Solutions (WGS) will perform system verification checks as the module is being built. WGS engineers will be in attendance throughout the entire shipyard construction phase of the module. Various components and systems will be tested in the shipyard as the module is assembled. Once the module is fully assembled, and prior to the first cargo loading operation, a system verification[4] using propane will be performed by WGS on the processing module.

A USCG approved Certifying Entity (CE) will review, inspect, test, and certificate facility vapor control system at the first loading operation in accordance with *33CFR § Subpart P - Marine Vapor Control Systems.* The OSV will have a Vapor Processing Operations Manual, with the VCS

[4] Where applicable, Texas GulfLink will work with EPA Region 6 to incorporate procedures and records that may assist in the conditions outlined by the Administrator within the initial performance test requirements of 40 CFR Subpart Y.

addendum, the local Coast Guard Captain of the Port (COTP) will be notified by the CE that the system meets the CFR requirements.

33 CFR § 154.2025 Certification, recertification, or operational review - *certifying entity* documentation.

(a) If the *certifying entity* is satisfied that the *facility*'s vapor control system (VCS) has successfully undergone the reviews, inspections, and tests required by *33 CFR 154.2022*(a) for certification or recertification, and that the VCS will operate properly and safely, the *certifying entity* must certify or recertify the VCS by issuing a certification letter to the *facility* owner or operator, and by sending copies of the letter to the *Captain of the Port (COTP)* and the *Commandant*. The certification letter must refer by date to the certifying entity's letter of acceptance issued under *33 CFR 154.2011*(c), and must -

(1) State that the *facility* complies with applicable regulations and with its operations manual, and list any exemptions to the applicable regulations that have been approved by the Coast Guard;
(2) Report on all reviews, inspections, and tests undergone by the VCS in accordance with *33 CFR 154.2022*(a);
(3) List all plans and drawings that were reviewed by the *certifying entity*;
(5) List all cargoes that the certifying entity approves for control by the VCS.

(b) If the certifying entity is satisfied that the facility's VCS has successfully undergone the operational review required by 33 CFR 154.2022(b), the certifying entity must issue an operational review letter to the facility owner or operator, and send copies of the letter to the COTP and the Commandant. The operational review letter must -

(1) List each item reviewed and inspected;
(2) Describe the transfer or cleaning operation observed; and
(3) Summarize the review's results.

WGS engineers will attend the first (6) loading operations at the Deepwater Port to provide technical assistance and verification that the module is performing as designed. System checks and adjustments to ensure peak performance of the recovery module will be addressed in this phase.

Subpart P—Marine Vapor Control Systems (reference)

33 CFR § 154.2020 Certification and recertification - owner/operator responsibilities.

(a) Prior to operating, a new vapor control system (VCS) installation must be certified under 33 CFR 154.2023 by a certifying entity as meeting the requirements of this subpart.

(d) To apply for certification, the owner or operator of a facility VCS must submit plans, calculations, specifications, and other related information, including a qualitative failure analysis, to the certifying entity. Suggested, but not mandatory, guidance for preparing a qualitative failure analysis can be found in the American Institute of Chemical Engineers publication "Guidelines for Hazard Evaluation Procedures," and in Military Standard MIL-STD-882B for a quantitative failure analysis.

(1) The VCS can operate continuously and safely while controlling cargo vapors to or from tankships or tank barges over the full range of transfer rates expected at the facility;
(2) The VCS has the proper alarms and automatic shutdown systems required by this subpart to prevent an unsafe operation;
(3) The VCS has sufficient automatic or passive devices to minimize damage to personnel, property, and the environment if an accident were to occur;
(4) If a quantitative failure analysis is also conducted, the level of safety attained is at least one order of magnitude greater than that calculated for operating without a VCS; and
(5) If a facility uses a cargo line pigging system to clear cargo in the cargo line back to the tank vessel with the VCS connected, the qualitative failure analysis must demonstrate that the cargo line pigging system has at least the same levels of safety required by paragraphs (d)(1), (2), and (3) of this section to prevent overpressure of the vessel's cargo tanks and account for the probability that the pig is destroyed during line-pigging operations.

(*e) The VCS owner or operator must maintain at the facility -*

(1) A copy of VCS design documentation, including plans, drawings, calculations, and specifications for the VCS;
(2) The facility operations manual, including the list of cargoes that the facility is approved to vapor control;
(3) Any certification or recertification letter issued under 33 CFR 154.2023; and
(4) Other records as required by 33 CFR 154.740.

33CFR § 154.2022 Certification, recertification, or operational review – certifying entity responsibilities, general

Before the initial certification of a facility vapor control system (VCS) the certifying entity must perform each of the tasks specified in this section.

(a) Review all VCS design documentation, including plans, drawings, calculations, specifications, and failure analysis, to ensure that the VCS design meets the requirements of this subpart.

(b) Conduct an initial onsite inspection to ensure that the VCS installation conforms to the VCS plans, drawings, and specifications reviewed.

(c) Conduct onsite reviews and observe tests to ensure the VCS's proper operation in accordance with its design and compliance with applicable regulations and the facility's operations manual and to ensure that -

(1) Each alarm and shutdown shown on the piping and instrumentation diagrams (P&IDs) and reviewed in the hazard analysis as part of the system responds properly, through simulation of emergency conditions to activate the alarm or shutdown;

(2) Maximum vacuum cannot be exceeded at the maximum operating conditions of any vapor-moving device, through testing of the vacuum breaker;

(3) VCS shutdown occurs correctly, through the startup of the VCS and tripping of each shutdown loop while the VCS is not connected to a vessel;

(4) VCS startup, normal operation, and shutdown occur properly, through observing the relevant portions of a test loading or unloading of one vessel, or a test cleaning of one tank barge at a tank barge cleaning facility; and that

(5) The automatic liquid block valve successfully stops flow of liquid to the vessel during a system shutdown, through observing the relevant portions of a test loading or test cargo tank cleaning.

§ 154.2024 Operational review - certifying entity responsibilities, generally.

In conducting an operational review the certifying entity must ensure that the vapor control system (VCS) is properly operating and maintained by performing the tasks specified in this section.

(a) Ensure the completeness, currency, and accuracy of the facility operations manual, training plans, and VCS test procedures.

(b) Confirm through training records that the current listed available facility persons in charge have been trained in compliance with 33 CFR 154.2030 or 154.2031.

(c) Confirm that recordkeeping and testing and inspection comply with 33 CFR 154.740 and 156.170.

(d) Verify that there has been no change to the VCS equipment or instrumentation since the last certification, recertification, or operational review to ensure that the certification letter is current.

(e) *Verify proper marking, labeling, maintenance, and operation of VCS components, through visual inspection.*

(f) *Confirm that the originally certified liquid cargo transfer rate can still be attained in compliance with 33 CFR 154.2103 and 154.2107.*

An initial performance test[5] will also be conducted using the above frame work and in partnership with guideline conditions agreed upon by EPA Region 6, as delegated by the Administrator, specific to Texas GulfLink.

> Initial performance test**.** *An initial performance test shall be conducted using the procedures listed in § 63.7 of subpart A of this part according to the applicability in Table 1 of § 63.560, the procedures listed in this section, and the test methods listed in § 63.565. The initial performance test shall be conducted within 180 days after the compliance date for the specific affected source. During this performance test, sources subject to MACT standards under § 63.562(b)(2), (3), (4), and (5), and (d)(2) shall determine the reduction of HAP emissions, as VOC, for all combustion or recovery devices other than flares. Performance tests shall be conducted under such conditions as the Administrator specifies to the owner or operator based on representative performance of the affected source for the period being tested. Upon request, the owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests. Sources subject to RACT standards under § 63.562(c)(3), (4), and (5), and (d)(2) shall determine the reduction of VOC emissions for all combustion or recovery devices other than flares.*

In addition, please include your proposed monitoring methodology on how the system is to be monitored in order to demonstrate continuous compliance in maintaining the emissions reductions being relied upon. Please provide appropriate and specific monitoring, testing (initial and periodic), recordkeeping and reporting methods to assure and demonstrate ongoing continuous compliance. In addition, due to the key nature of the system, please include a scheduled maintenance plan (including a list of critical spare parts) necessary to be readily available to assure proper system operations.

Response: The ongoing monitoring to ensure compliance and proper testing/recordkeeping was outlined in the response to question #2. The primary monitoring methodology is by two (2) subsystems, the Gas Analyzer and PLC input calculations. The secondary monitoring system specific to operating conditions has set points outlined in the previously referenced document:

- **Appendix VII - Wärtsilä VOC Recovery System – VOC ESD & PSD PLC Chart**.
  - This document is considered **Confidential Business Information**

[5] 40 CFR 63.563(b)(1)

Wartsila Gas Solutions ("WGS") has compiled a draft maintenance schedule and list of critical spare parts from the fifteen (15) vapor recovery modules in service today in the North Sea. The critical spare parts list was further updated specifically for TGL given the dual VRM train design.

See:

- **Appendix VIII - Wärtsilä VOC Recovery System – Draft Maintenance Schedule**
    - This document is considered **Confidential Business Information**
- **Appendix IX - Wärtsilä VOC Recovery System – Draft Two Year Recommended Spare Parts List**
    - This document is considered **Confidential Business Information**

Thank you for giving us this opportunity to respond to your questions regarding the minor NSR and Title V air permit applications for the proposed GulfLink deep water port project.

We understand the responsibility required to ensure that the proposed vapor recovery operation adheres to the standards set forth by regulation. Texas GulfLink recognizing this is an ongoing conversation to properly educate all involved and identify areas where additional information may be needed in developing the initial testing, ongoing monitoring, and reporting mechanisms. Our team is ready to discuss further on these topics if requested.

If you have any additional questions, please feel free to contact me at (504) 810 12-73 or by e-mail at tyler@abadie.us .

Kind Regards,

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